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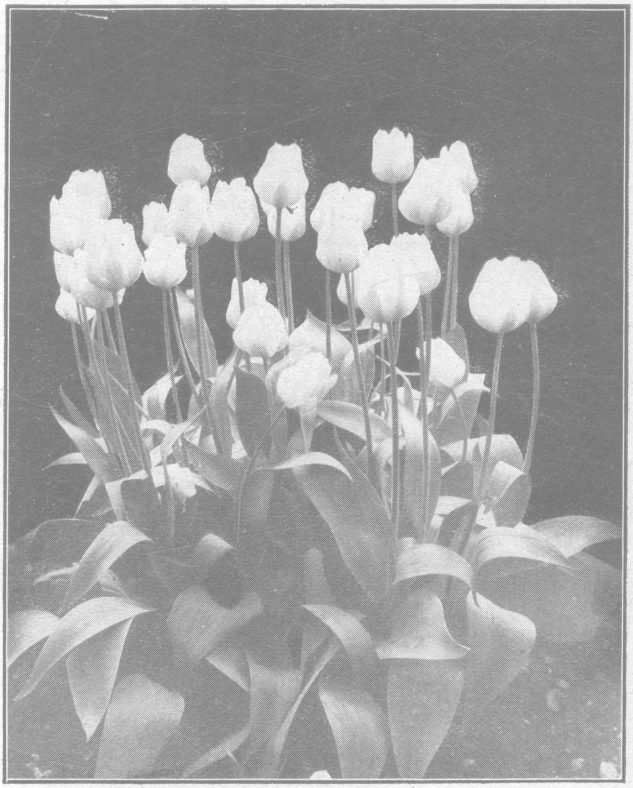
The Agricultural College

EXTENSION BULLETIN

BUDS IN EARLY SPRING—PROF. W. R. LAZENBY.



In all places, then, and in all seasons,
Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
How akin they are to human beings.

And with childlike, credulous affection
We beheld their tender buds expand:
Emblems of our own great resurrection,
Emblems of the bright and better land.—LONGFELLOW.

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COLUMBUS

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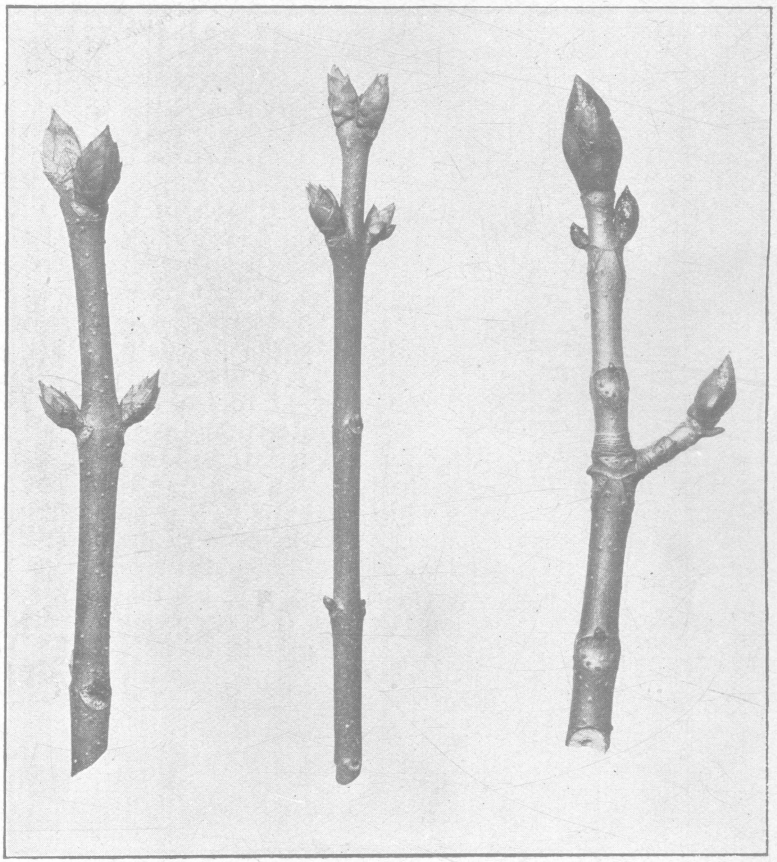
AMERICAN ELM

1 Branch in winter state: a, leaf-scars; b, bud-scars; d, leaf-buds; e, flower-buds.
2 Branch, with staminate flower-buds expanding.
3 Branch more advanced.
4 Branch with pistilate flowers, the leaf-buds expanding.

BUDS IN EARLY SPRING

Professor W. R. Lazenby.

We rejoice at the advent of spring. We enjoy the balmy air and bright sunshine. We welcome the return of the birds and keep a sharp lookout for the early flowers. The trees and shrubs that have been sleeping during the long winter are now beginning to awake. The first real signs of life are the swelling and bursting of the buds. Let us see what these buds are and what they become.



Buckeye Bud Lilac Bud Horse-chestnut Bud

Buds are undeveloped stems and may become leaves, flowers, or leafy branches. They are of various shapes and sizes according to the shrub or tree which bears them, but they are alike in this: from them all come flowers, leaves, and new shoots.

Buds that produce leaves or shoots and no flowers are called leaf-buds. Those that produce flowers and no leaves are called

flower-buds. There is another class of buds that produce both leaves and flowers, and they are called mixed buds.

The object of the leaf bud is to keep the plant alive and make it grow. The leaves are the organs through which the plant breathes and by means of which it digests its food. They may be called the lungs and stomach of the plant. The leaves also collect or absorb a large part of the food of plants. If the leaves were all removed from a plant during the spring and summer it would die of starvation.

The object of the flower bud is to produce flowers, and from these flowers comes the seed of the plant. Seeds are somewhat like the eggs of birds. As from the egg comes a young bird like the mother bird, so from the seed comes a young plant like the mother plant that produced it.

With reference to their position on the plant, buds are called *terminal* or *lateral.* The bud at the extreme tip of the stem is called the terminal bud. It terminates or ends the branch or shoot that bears it. Terminal buds are usually larger and often develop earlier than the lateral buds that are borne on the sides of the branch or stem. The beech, buckeye, horse-chestnut, hickory, lilac, and other trees and shrubs have large terminal buds.

If you examine them carefully while they are opening, you can scarcely fail to be interested in the various ways nature has protected them from the severe cold and storms of winter. You will first find the buds surrounded by a series of protective scales overlapping each other like the shingles on the roof of a house. Then you may find some fine water-proof material and wooly-like hairs that also serve to protect the parts within. If you have the chance to see the buds of the horse-chestnut you will find them covered with a brown, sticky varnish which makes a very good storm coat.

You may have noticed the close resemblance of the horse-chestnut and buckeye. They belong to the same family of plants, and look much alike. But in winter we can always tell the horse-chestnut by its varnished buds. In fact if we are observing we can tell almost any of our trees in winter by their buds.

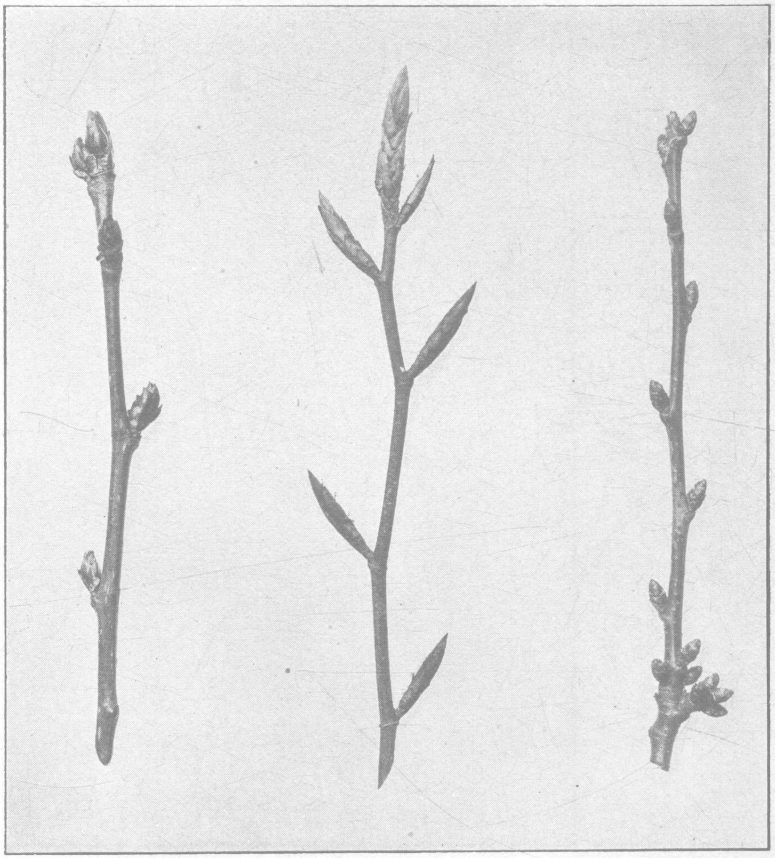
The flower buds of four common fruit trees are interesting. We shall all rejoice when our apple, pear, peach, plum, and cherry trees are in bloom. We shall enjoy the beauty and fragrance of their flowers all the more if we know something about the buds from which the flowers come. The flower buds of the peach are quite prominent from about the first of February in central and southern Ohio, and are usually of good size. Only one flower comes from each bud, and as a rule more than one-half of all the buds on a peach tree are flower buds. Unfortunately many of the flower buds are killed by our severe winters. You can easily tell when peach buds are killed. All that you have to do is to cut the bud open and see whether the little round ovary in the very center of the bud is green. If it is black or dark colored the bud is killed and will produce no fruit.

Until quite late in the spring there is very little difference between the leaf bud and flower buds of the apple. As a rule the

flower buds are borne on spurs or short twigs. They are but little larger than the leaf buds, but are more regular in shape and usually a trifle longer.

The so-called blossom-buds of the pear, which are so prominent in spring are good examples of mixed buds. Each one contains a cluster of flowers varying from six to nine in number, and, in addition, five or six leaves which develop and form a whorl around the flower cluster.

The flower buds of the cherry are formed early in the summer



Pear Bud Beech Bud Cherry Bud

before they bloom. In other words cherry trees produce buds nearly a year in advance of the flowers. There are often from three to six flower buds in a single cluster and each bud produces from two to five flowers. Is it any wonder our cherry trees are so loaded with blossoms?

How many will count the flowers that come from single buds from common fruit trees?

Conditions Necessary for Seeds to Sprout

Experiment No. 1.

In tumblers or bottles of water place about twenty grains of corn, beans, or peas, and let them soak exactly one day. On the following day put the same number of grains of corn, beans, or peas in other bottles or tumblers of water and let them soak three hours. So arrange it that those seeds that have been soaking one day and those soaking three hours may be taken from the water at exactly the same time. Place the seeds on a cloth and carefully dry them by pressing a rag against them. Put the seeds in dry bottles and cork them. Tie paper tightly over them if you have no corks. Mark one "Soaked one day" and the other "Soaked three hours." Keep them in a warm room.

Look at the seeds from day to day. Why is it that those soaked one day sprouted? Which seeds had absorbed the most moisture?

Seeds must be so planted that they will receive sufficient moisture to sprout them and the soil must be so prepared that it will retain sufficient moisture for the seeds.

Experiment No. 2.

It will be found that the seeds in one bottle in experiment No. 1 will sprout, but they will not continue growing, if the bottle has been corked tightly. Take out the cork and immediately afterward put a lighted match into the bottle. The sprouts have taken something from the air and the match will not burn. Fill a second dry bottle more than half full of seeds that have been soaked one day. They will put forth only short sprouts if the bottle be tightly corked. There was not enough air for so many sprouts. Place a few seeds in a tumbler of water for several days. What results? Sprouting seeds need fresh air.

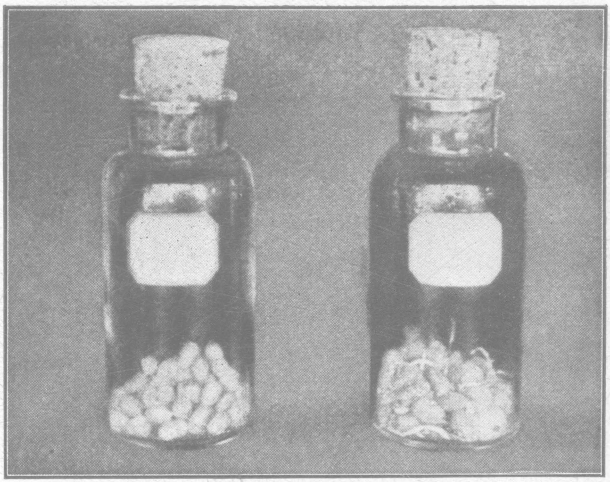
Experiment No. 3.

In a tumbler or tin can put some wet sand; in another tumbler or can put some clay that is about the proper consistency for "mud pies." Plant three or four grains of corn one inch deep in each tumbler. Place a piece of glass over each tumbler to prevent the soil drying rapidly by evaporation. If the clay cracks, dampen and fill up the cracks. The seeds in the sand will sprout and grow a little; the seeds in the clay will not sprout. In one the air could circulate, in the other, it could not. It is necessary to stir soil to ventilate it.

Experiment No. 4.

Plant a few seeds in tumblers or cans. Set one out of doors when the air is cold; keep the other in a warm light room. This experiment will prove that heat is also necessary to sprout seeds.

Experiment No. 1.

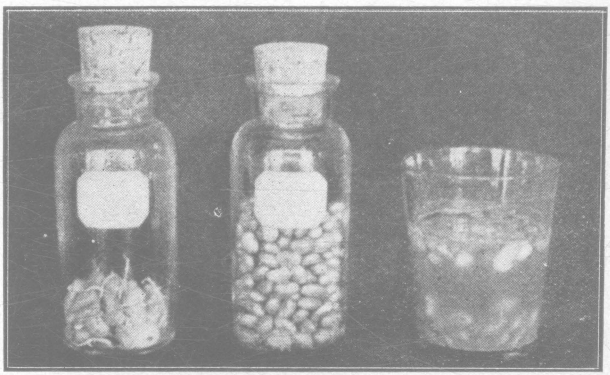


"First Book of Farming" by Goodrich. Copyright 1905.
Doubleday, Page & Co., N. Y.

Beans soaked 3 hours. Beans soaked one day.

Both removed from water and put into dry bottles.

Experiment No. 2.



"First Book of Farming" by Goodrich. Copyright 1905.
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A. B. C.

Beans in both bottles soaked one day, and then put into dry bottles.
Bottle A contains sufficient air to start the few seeds.
Bottle B had not enough.
The water in the tumbler C did not contain enough air to sprout the beans.

Experiment No. 5.

In a good size box plant corn at different depths. In one place plant three grains two inches deep, another three inches deep and so on, each time increasing the depth by one inch. Bore holes in the box for drainage. Keep well watered and the top soil loose (This experiment will teach us that many times corn fails to come up because it has not the strength to force its way through the soil.)

Experiment No. 6.

Plant beans after the plan suggested in experiment No. 5. You will note that beans should not be planted very deep or they will not be able to push through the soil each of the "half beans" the little plant carries up with it for food. Does corn carry any of its food above the soil as the bean does? Does the garden pea? Which may be planted the deeper, beans or peas? Why should lettuce and many of our common fine flower seeds be sowed on a well-pulverized soil or seed bed and then stirred into the soil by using just the finger tips, or by firming by pressing a board or hand against the soil?

List of Trees, Shrubs and Flowers for School Grounds

Trees:

Ash, Birch, Catalpa, Coffee Tree, Elm, Gingko, Buckeye, Bass-wood or Linden, Maple, Mulberry, Oak, Sweet Gum, Sycamore, Tulip (commonly called Poplar), Willow.

Shrubs:

Barberry, Button Bush, Red-bud (Judas Tree), Fringe Tree, Japan Quince, Elder, Burning-bush, Cornus (Dog-wood), Privet, Lilac, Syringa, Flowering Currant, Bush Honeysuckle, Snowball, Spiraeas or Bridal Wreath.

Climbers:

Virginia Creeper, Bittersweet, Clematis, Trumpet Creeper, Wistaria, Moon Seed.

Annual Climbers:

Morning Glory, Moon Vine, Hop-vine, Sweet Pea, Nasturtium.

Flowering Plants:

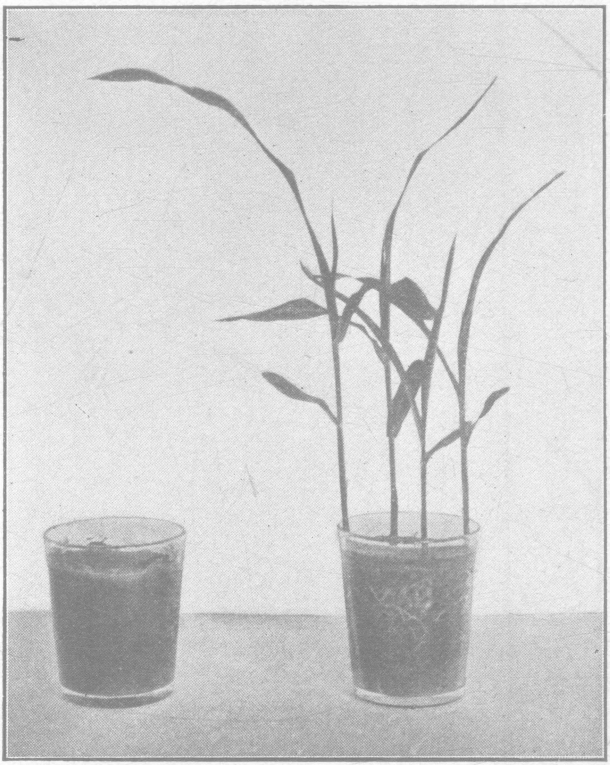
Annuals.

Asters, Balsams, Cosmos, Petunia, Phlox, Poppy, Sun-flowers, Castor-oil Bean.

Perennials.

Native Asters, Golden-rod, Blue-bell, Larkspur, Foxglove, Hollyhock, Golden Glow, Peony, Large Phlox, Helenium,

Experiment No. 3.



"First Book of Farming" by Goodrich. Copyright 1905.
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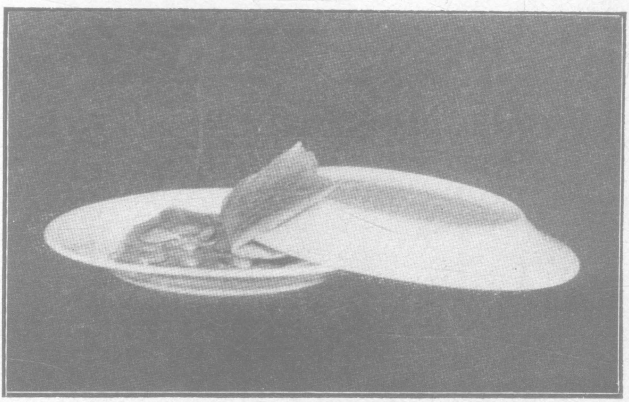
A. B.

Corn planted in hardened clay in tumbler A could not get sufficient air for sprouting. The moist sand in tumbler B admitted enough air for sprouting.



"First Book of Farming" by Goodrich. Copyright 1905.
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A seed tester consisting of two plates and a moist cloth.

The School Paper

To establish the habit of reading good books and papers the work should be begun in the elementary grades. There is much waste of time in reading the miscellaneous articles in the average newspaper.

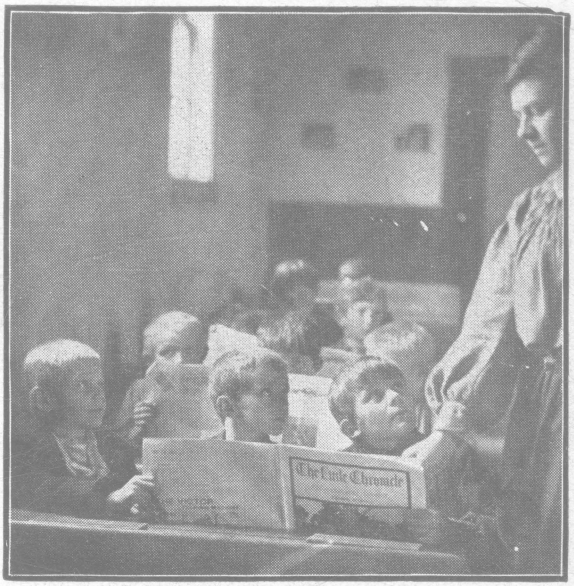
Such clean, wholesome papers as the Little Chronicle and the Pathfinder should be found in every country school. When the boys and girls have once come into the current of events they are willing and anxious to read what has most to do with building

A Country School Ground Improvement

Tulips and hyacinths planted last fall will be found blooming this spring as shown in this illustration.

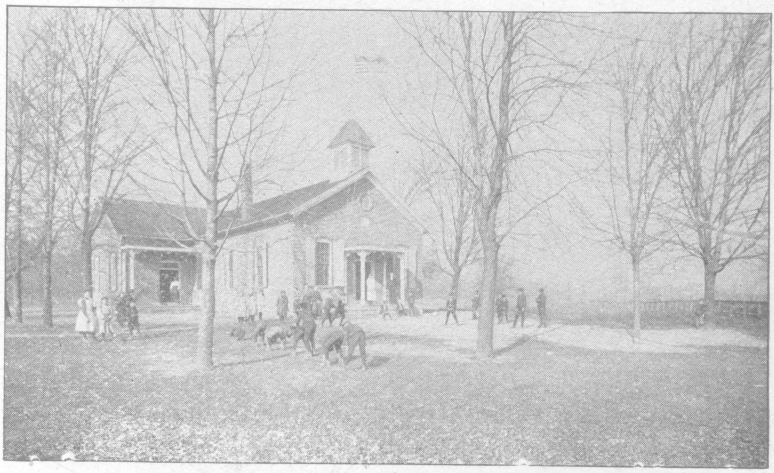
up wholesome institutions and what makes for the better rather than material that has little more than sensationalism to commend it.

Let our children have good books and papers and we have little to fear from their future reading. But teacher or parent who is careless or indifferent on this point may be unconsciously assisting to sow seed from which "a harvest of barren regrets" may be reaped.



The Little Chronicle being used in a country school.

The country school library and the school newspaper—The Pathfinder.
Both in real use.



With such beautiful trees and spacious playground, it is not strange that the children love the school.

A Country School Ground Improvement.
A crimson rambler-rose five years old.

REPORT BLANK (F o it and r tur to the College of Agr ti re Ol o State Un vers ty)

		Radishes	Lettuce	Beans	Beet	Tomato
1	Date planted	May 1, 1905	May 1, 1905	May 9, 1905	May 1, 1905	May 2, 1905
2	Date at wh ch f rst plants appeared	May 6, 1905	May 6, 1905	May 22, 1905	May 7, 1905	May 5, 1905
3	Date of th nning	June 1, 1905	June 2, 1905	June 8 1905	June 8 1905	June 11, 1905
4	Date when ready for use	June 19 1905	June 9, 1905	July 20 1905	July 1, 1905	Sept 15, 1905
5	Amount marketed in money	27 ¢	20 ¢	20 ¢	10 ¢	20 ¢
6	Total yield	5 bunches		½ pick	2 bunches	½ pick.

REMARKS

NAME Icie M. Claar CLUB Rural Schools Agricultural

ADDRESS R. F. D. # 4 COUNTY Clark TOWNSHIP Springfield

A garden vegetable record kept last year by Icie Claar.
A very accurately kept record.

REPORT BLANK (Fill out and return to the College of Agriculture, Ohio State University)

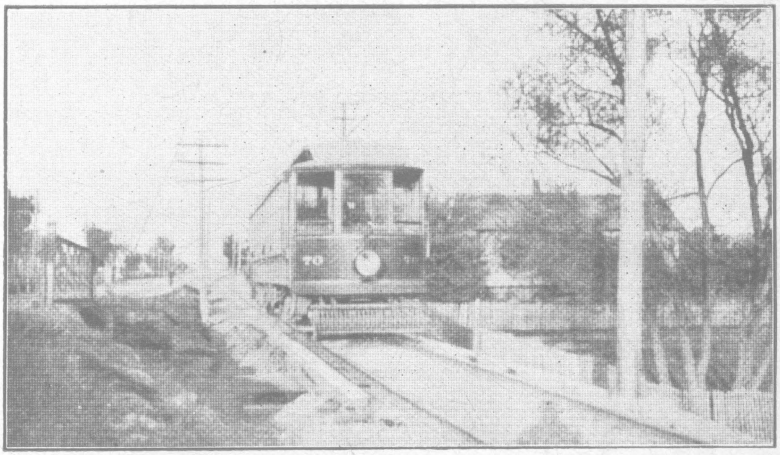
		Ageratum	Petunia	Nasturtium	Polly	Zinnia
1	Date planted	April 25	April 25	April 25	April 25	April 25
2	Date at which first plants appeared	May 2	May 5.	May 6.	May 9	May 1
3	Date when first bloom appeared	August 10	August 1	June 28	June 24	August 5
4	Number of days or weeks the plants were in bloom	9 weeks	11 weeks	6 weeks	7 weeks	11 weeks
5	Which produced seeds	—	seeds	Seeds	seeds	—

REMARKS The Ageratum did not bloom till late being shaded by other plants The nasturtium & poppy were also crowded out by weeds so that they quit blooming early

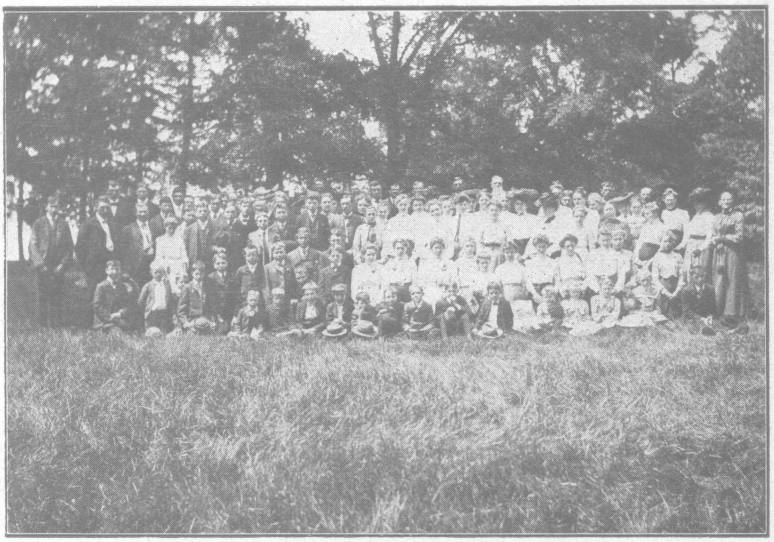
NAME Jessie Battin CLUB

ADDRESS So Charleston COUNTY Clark TOWNSHIP Madison

A well kept flower record by Jessie Battin.
Such records as these are expected of all our boys and girls who have been furnished seeds.

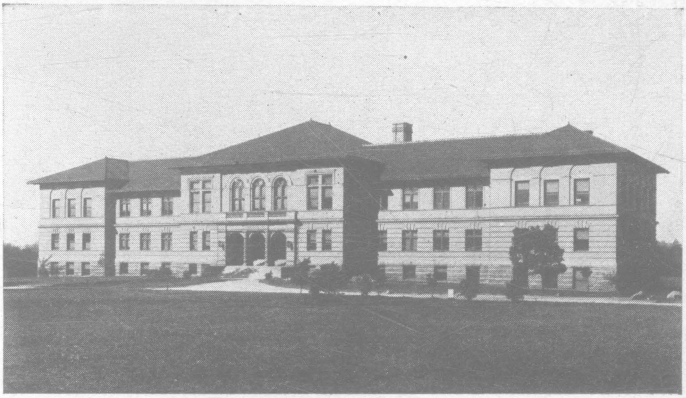


Farmers and their families coming on the electric car to visit the Agricultural College at the Ohio State University.



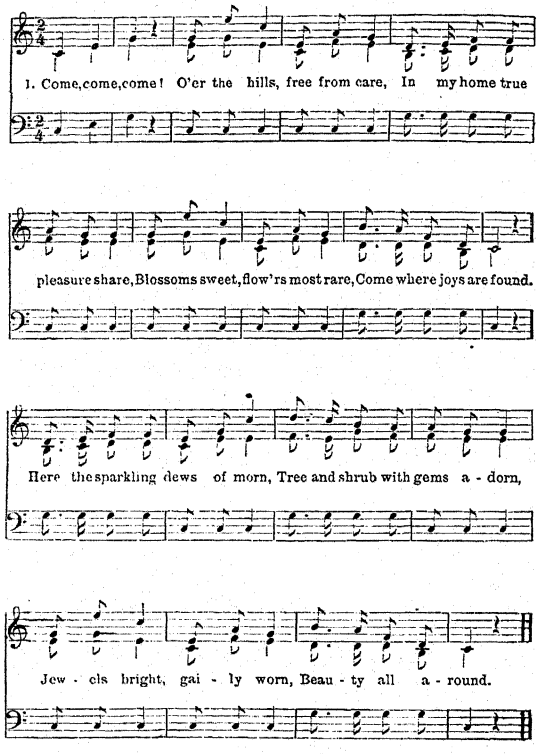
Near the University Spring just after dinner.

After an inspection of the Agricultural College has been made.
Ready to return home after spending a pleasant and profitable day.



Townshend Hall at the Ohio State University.
This is where the summer course in agriculture for country school teachers will be given.

THE INVITATION.



Come, come, come!
Not a sigh, not a tear,
E'er is found in sadness here,
Music soft, breathing near,
Charms away each care.
Birds in joyous hours, among
Hill and dale, with grateful song,
Dearest strains here prolong,
Vocal all the air.